Introduction to Routine Vaccine Preventable Disease (VPD) Case Investigations

Haemophilus influenzae, Streptococcus pneumoniae, Varicella

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Outline

• *Haemophilus influenzae* (HI)
  • Clinical Presentation and Epidemiology of HI
  • Role of Local Health Follow-up (MAVEN and Control Measures)
• *Streptococcus pneumoniae*
  • Clinical Presentation and Epidemiology of *S. pneu*mo
  • Role of Local Health Follow-up (MAVEN and Control Measures)
• **Varicella Cases and Clusters**
  • Clinical Presentation and Epidemiology of Varicella
  • Role of Local Health Follow-up (MAVEN and Control Measures)
• **Key Takeaways**
What is *Haemophilus influenzae* (HI)?

- ***Haemophilus influenzae* is a gram-negative bacteria**
  - Many people can carry HI in their throats and noses but remain asymptomatic and do not develop infection
  - There are 6 distinct types of HI (types a-f) and a non-typable strain
  - Invasive (infection of a normally sterile site) HI disease is reportable in MA
    - If the specimen is not from a sterile site, the event will be revoked by a state epi and no follow-up is needed

- ***Haemophilus influenzae type b* (Hib) is an HI strain that can be serious if it becomes invasive**
  - Hib is the only type for which there is a vaccine and control measures are necessary
  - Prior to Hib vaccine, Hib was the most common cause of bacterial meningitis
Clinical Presentation of HI

- Invasive HI disease can produce various clinical syndromes including:
  - Meningitis
  - Bacteremia
  - Epiglottitis
  - Cellulitis
  - Septic arthritis
  - Pneumonia
  - Otitis media
    - 50% of acute otitis media in children is caused by non-typable HI!
  - Pericarditis
  - Osteomyelitis
  - Conjunctivitis

Q: But how do I know which type of infection someone has?

A: You can talk to the IP about diagnoses, but you can also check the lab tab for the specimen source!

- Positive blood sample = bacteremia
- Positive joint fluid = septic arthritis
- Positive CSF = meningitis or encephalitis
- Positive middle ear fluid = otitis media

Remember you can +Add New for multiple entries!

Pinkbook: Haemophilus influenzae | CDC
Epidemiology of HI

• **Transmission:** Person to person by inhalation of respiratory droplets or direct contact with respiratory secretions of an infected person

• **Incubation period:** Unknown, though for invasive disease it may be as short as 2-4 days

• **Season:** Peaks in late fall

• Invasive HI disease is most prevalent among children aged 2 months - 3 years
  - Unusual in healthy individuals over the age of 5 years

• Hib primarily occurs in infants who are too young to have completed a primary series of immunization and under immunized children

• Secondary cases may occur in households, daycare centers, and other institutional settings, though rare
MA HI Cases by Year, 2012-2022

* Data through 12/05/2022

**Total includes all events in MAVEN (<18 years, all serotypes, all case classifications (Confirmed, Probable, Suspect, Revoked))
LBOH Follow-up: Control Measures & MAVEN

*Haemophilus influenzae* (HI)
Control Measures for Hib

• There are only control measures for Hib (Haemophilus influenzae type B); there are no control measures for other types

• For Type B only:
  • Case should isolate until 24 hours after initiating appropriate antimicrobial treatment
  • Prophylaxis and immunization of close contacts may be indicated
  • No quarantine of close contacts
Prophylaxis of Close Contacts: *Haemophilus influenzae* Type B Only

**Chemoprophylaxis is Recommended**

| Household Contacts | All household contacts (except pregnant women), regardless of age, in households where at least one contact is <4 years of age and is unimmunized or incompletely immunized  

|  | All household contacts (except pregnant women), irrespective of age, in households with an immunocompromised child, regardless of the child’s Hib immunization status or age |

| Childcare Contacts | Nursery and childcare center contacts, regardless of age, when >2 cases have occurred within 60 days |
## Prophylaxis of Close Contacts

*Haemophilus influenzae* Type B Only

<table>
<thead>
<tr>
<th>Chemoprophylaxis is NOT Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In Certain Individuals</strong></td>
</tr>
<tr>
<td>• Pregnant women</td>
</tr>
<tr>
<td><strong>Household Situations</strong></td>
</tr>
<tr>
<td>• Occupants of households with no children &lt;4 years of age, other than the index patient</td>
</tr>
<tr>
<td>• Occupants of households when all household contacts under 4 years of age have completed their Hib immunization series and when all household contacts younger than 12 months of age have completed their primary series of Hib immunizations</td>
</tr>
<tr>
<td><strong>Childcare Situations</strong></td>
</tr>
<tr>
<td>• Nursery and childcare center contacts of one index case, especially contacts &gt;2 years of age</td>
</tr>
</tbody>
</table>
# Immunization of Case and Contacts

**Haemophilus influenzae Type B Only**

<table>
<thead>
<tr>
<th>Immunization</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Case</strong></td>
<td>• Children with invasive Hib disease at &lt;2 years of age: Immunize according to the age-appropriate schedule for unvaccinated children and as if they had received no prior doses. Begin one month after onset of disease or as soon as possible thereafter.</td>
</tr>
<tr>
<td></td>
<td>• Children with invasive Hib disease at &gt;2 years of age: Hib immunization is not recommended, regardless of previous immunization status. However, Hib vaccination is not contraindicated and can be given as a single antigen or as part of a combination vaccine.</td>
</tr>
<tr>
<td><strong>Contacts</strong></td>
<td>• Ensure appropriate immunization of contacts. Unvaccinated and incompletely vaccinated children &lt;5 years of age should be scheduled for completion of the recommended age specific immunization schedule.</td>
</tr>
<tr>
<td></td>
<td>• Infants should be placed on an accelerated schedule using minimum intervals between doses.</td>
</tr>
<tr>
<td></td>
<td>• Unvaccinated high-risk individuals &gt;5 years of age should receive one dose.</td>
</tr>
</tbody>
</table>
Hib Vaccination Schedule

• **ActHIB®, Hiberix®, Pentacel®, or Vaxelis®:**
  - 4-dose series
    - 3 dose primary series at age 2, 4, and 6 months
    - booster dose at age 12–15 months

• **PedvaxHIB®:**
  - 3-dose series
    - 2-dose primary series at age 2 and 4 months
    - booster dose at age 12–15 months

[Hib Vaccine Recommendations | CDC](https://www.cdc.gov/hib/vaccine.html)
[Birth-18 Years Immunization Schedule | CDC](https://www.cdc.gov/vaccines/schedules/hcp/birth-18yrs.html)
[Catch-up Immunization Schedule | CDC](https://www.cdc.gov/vaccines/schedules/hcp/ catchup.html) (helpful charts!)
MAVEN Question Packages

**LBOH NOTE:** Most HI serotyping results will not be immediately available when an HI event is created, however LBOH should still begin work to complete the MAVEN variables. (Control Measures are only considered if type B is identified.)

- The state Epi assigned to the case will request specimens be forwarded to SPHL for serotyping
- Regardless of typing, all question packages in MAVEN should be completed
- For most cases, there is no need to call patient/family*
- All clinical information can be collected from hospital infection preventionist
  - If vaccination info is needed, can look in MIIS or ask for the name of PCP from the IP and call PCP for vaccination information

*For **Hib** cases, we need to confirm that the person has not had recent contact with a young infant/child who is unvaccinated or under vaccinated

Q: How do I find the hospital or provider information?

A: Check the lab tab! Here you can see the ordering facility information. You can also refer to the list of Infection Preventionists in Maven Help.
MAVEN – Vaccine History

**No vaccine administered** = Parent/guardian or provider confirm that case is unvaccinated, OR Case was born before 1980 when Hib vaccine was not available
Note: if this is the case, select "Other" for reason and type "Age"

**Unknown vaccine or IG administered** = Parent/guardian or vaccination record lists doses of Hib vaccine but doesn’t specify formulation. Add all the dates but vaccine is unknown.

**Vaccination history unknown** = Don’t know if case has received vaccine or not. Nothing in MIIS. Pediatrician has no record.

Don’t forget to “Add new” to add each dose!
STREPTOCOCCUS PNEUMONIAE
What is *Streptococcus pneumoniae* (*S. pneumo*)?

- *S. pneumo* is a common gram-positive bacterial pathogen
- There are more than 100 serotypes!
- Invasive (infection of a normally sterile site) *S. pneumo* cases in individuals <18 years of age are reportable in MA
  - If the specimen is not from a sterile site, the event will be revoked by a state epi and no follow-up is needed
- Carriage rates vary, ranging from 5% - 90% of healthy persons
  - Among school-aged children, 20%-60% may be colonized, while 5% to 10% of adults without children are colonized
Clinical Presentation of *S. pneumoniae*

Many people carry the pathogen without infection, but if infection occurs, it can vary in clinical manifestations, including:

- Meningitis
  - Causes more than 50% of all bacterial meningitis cases in the U.S.
- Bacteremia
- Pneumonia
  - Most common cause of bacterial childhood pneumonia
  - 10-30% adult community-acquired pneumonia
- Acute otitis media (AOM)
- Sinusitis
- Conjunctivitis

Q: But how do I know which type of infection someone has?

A: You can talk to the IP about diagnoses, but you can also check the lab tab for the specimen source!

- Positive blood sample = bacteremia
- Positive joint fluid = septic arthritis
- Positive CSF = meningitis or encephalitis
- Positive middle ear fluid = otitis media

Remember you can +Add New for multiple entries!
Epidemiology of *S. pneumo*

- **Transmission:** Person to person by respiratory droplets (more often causes colonization than invasive disease)
- **Incubation period:** Not generally known, as invasive disease usually occurs in already colonized people, though thought to be short (1-3 days for pneumococcal pneumonia)
- **Infectious period:** Unknown, but presumably as long as organism is present in respiratory secretions, varies with host factors (immunocompromised, etc.)
- **Season:** Most common in winter and early spring
MA *S. pneumoniae* Cases by Year, 2012-2022

* Data through 12/05/2022

**Total includes all events in MAVEN (all ages, all serotypes, all case classifications (Confirmed, Probable, Suspect, Revoked))

<table>
<thead>
<tr>
<th>Year</th>
<th>Total**</th>
<th>Confirmed (age &lt; 18)</th>
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<tbody>
<tr>
<td>2012</td>
<td>681</td>
<td>60</td>
</tr>
<tr>
<td>2013</td>
<td>658</td>
<td>38</td>
</tr>
<tr>
<td>2014</td>
<td>625</td>
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<td>2016</td>
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<td>2017</td>
<td>681</td>
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<td>2021</td>
<td>169</td>
<td>24</td>
</tr>
<tr>
<td>2022*</td>
<td>318</td>
<td>42</td>
</tr>
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</table>
LBOH Follow-up: Control Measures & MAVEN

Streptococcus pneumoniae
Control Measures for *S. pneumoniae*

- There are no routine control measures other than recommended age-appropriate immunization
- Isolation of colonized or infected people is not necessary
- **No quarantine for close contacts**
- While there are no special control measures for daycares, if a case attends childcare or an institutional setting, the facility should be contacted to inform them of the case.
  - Use the case as an educational opportunity to promote vaccination!
Vaccination Schedule

• For all children younger than 2 years of age:
  • 4 doses of PCV13 or PCV15: 2 months, 4 months, 6 months, and 12 through 15 months

• Vaccination for those age 2 – 64 years may be indicated based on certain medical conditions, see Pneumococcal Vaccination: Who and When to Vaccinate

• For all adults 65 years or older who have never received any pneumococcal conjugate vaccine or whose vaccination history is unknown:
  • PCV15 followed by a dose of PPSV23 one year later, OR;
  • PCV20 (additional PPSV23 is NOT indicated)
  • If vaccination history is known, see Pneumococcal Vaccination: Who and When to Vaccinate

Pneumococcal Vaccine Recommendations | CDC
2021 Pneumococcal Conjugate Vaccine (PCV)-Catch-up Guidance for Healthy Children 4 months through 4 years of Age (cdc.gov)
MAVEN Question Packages

LBOH NOTE: Serotyping results will not be immediately available when an SP event is created, however LBOH should still begin work to complete the MAVEN variables by calling the provider.

- The state Epi assigned to the case will request specimens be forwarded to SPHL for serotyping
- Regardless of typing, all question packages in MAVEN should be completed
- All clinical information can be collected from hospital IP or healthcare provider
  - Detailed immunization history should be collected
  - If the case is >5 years of age and has received at least one dose of PCV13, it is very important to ask the provider whether the patient has been evaluated for an immune disorder, has had their spleen or splenic function evaluated, or has had any other testing to evaluate immunologic function
**Vaccination**

*Don’t forget to “Add new” to add each dose!*

**No vaccine administered** =  
Parent/guardian or provider confirm that case is unvaccinated

**Unknown vaccine or IG administered** =  
Parent/guardian or vaccination record lists doses of pneumococcal vaccine but doesn’t specify formulation. Add all the dates but vaccine is unknown.

**Vaccination history unknown** =  
Don’t know if case has received vaccine or not. Nothing in MIIS. Pediatrician does not know.

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**Cheat Sheet:**

- PCV13 = Prevnar 13 (Pfizer)
- PCV15 = Vaxneuvance (Merck)
- PCV7 = Discontinued (previously Prevnar 7)
- PCV10 = Synflorix (GSK)
- PCV20 = Prevnar 20 (Pfizer)
- PPV23 = Pneumovax (Merck)
VARICELLA
What is Varicella?

- Primary varicella infection, also known as chickenpox, is an acute disease caused by the varicella-zoster virus (VZV)
- VZV is a DNA virus of the herpesvirus group
- Once infection occurs, the virus can remain dormant in the body
- Reactivation of varicella-zoster virus can cause latent infection resulting in shingles
  - *Shingles* is NOT reportable in MA
- Varicella is highly contagious
  - Secondary attack rates among susceptible household contacts are between 61% and 100%
  - Shingles is much less infectious (about 1/5 as infectious as primary varicella)

*Pinkbook: Varicella | CDC*
Clinical Manifestations of Varicella

- Classic symptom of varicella is a rash that turns into itchy, fluid-filled blisters that eventually scab
  - Typically appears first on scalp, face or trunk and spreads to extremities
- Other symptoms include:
  - Fever
  - Headache
  - Loss of appetite
  - Tiredness
- Generally mild illness in healthy children; adults may have more severe disease
- Complications can include:
  - Secondary bacterial infections
  - Pneumonia
  - Meningitis and encephalitis
# Epidemiology of Varicella

- **Transmission:** Person to person by droplet spread, direct contact with upper respiratory secretions or lesions that have not yet crusted over, or airborne spread
- **Incubation Period:** About 2 weeks (range 10-21 days) after exposure to a person with chickenpox or shingles for someone to develop chickenpox
- **Infectious Period:** 2 days before rash onset until all lesions have scabbed
- Illness usually lasts about 4-7 days

| Day  |  |  | Day 0 (rash onset) | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | Day 8 | Day 9 | Day 10 | ... | Day 21 |
|------|---|---|-------------------|------|------|------|------|------|------|------|------|------|------|-------|------|-------|
| Case |   |   | Infectious period (2 days before rash onset until lesions have crusted) |      |      |      |      |      |      |      |      |      | Quarantine Day 8-21 from case’s rash onset |
MA Varicella Cases by Year, 2012-2022

<table>
<thead>
<tr>
<th>Year</th>
<th>Total**</th>
<th>Confirmed/Probable</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>1256</td>
<td>627</td>
</tr>
<tr>
<td>2013</td>
<td>1181</td>
<td>474</td>
</tr>
<tr>
<td>2014</td>
<td>1121</td>
<td>469</td>
</tr>
<tr>
<td>2015</td>
<td>1146</td>
<td>356</td>
</tr>
<tr>
<td>2016</td>
<td>1033</td>
<td>289</td>
</tr>
<tr>
<td>2017</td>
<td>1365</td>
<td>380</td>
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<tr>
<td>2018</td>
<td>1212</td>
<td>293</td>
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<tr>
<td>2019</td>
<td>1165</td>
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<td>589</td>
<td>93</td>
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<tr>
<td>2021</td>
<td>707</td>
<td>99</td>
</tr>
<tr>
<td>2022*</td>
<td>623</td>
<td>96</td>
</tr>
</tbody>
</table>

* Data through 12/05/2022

**Total includes all events in MAVEN (<18 years, all serotypes, all case classifications (Confirmed, Probable, Suspect, Revoked))
LBOH Follow-up: Control Measures & MAVEN

Varicella
Varicella and LBOH

• Varicella is a reportable infection, however no follow-up at the local level is required on individual cases/MAVEN events.
  • Varicella events flow into the LBOH Notification but no follow up needed workflow
  • Case and clusters are reported via a report form found online at Infectious disease case report forms | Mass.gov (currently faxed in, but online reporting coming SOON!)

• It is not uncommon for LBOH to receive questions regarding varicella exposures and/or control measures in settings such as daycares and schools.

• LBOH should be familiar with control measures, defining susceptible contacts, and resources for assisting in these settings when required.
Control Measures for Varicella

**ISOLATION of CASES**
If vesicles are present: until lesions have dried and crusted, or until no new lesions appear, usually by the 5th day (counting the day of rash onset as day zero).

If no vesicles are present: until the lesions have faded (i.e., are in the process of resolving but do not need to be completely resolved) or no new lesions appear within a 24-hour period, whichever is later.

**QUARANTINE of CONTACTS**
Contacts in non-health care settings, who are not appropriately immunized or are without laboratory evidence of immunity or a reliable history of chickenpox, shall be excluded from public activities from the 8th through the 21st days after their exposure.

If the exposure was continuous, contacts shall be excluded from the 8th through the 21st days after the case's rash onset. Neonates born to mothers with active varicella shall be isolated from susceptibles until 21 days of age.

**Close Contact Definition:**
- Face-to-face contact
- Direct contact with lesions that have not crusted over
- Prolonged time in the same zone of exposure (ex: lunch table, classrooms, buses, extra curricular activities)

NOTE: In most settings, casual, brief contact would not constitute exposure, nor would an entire school be considered exposed. However, zones of exposure may be widened in certain high-risk settings.
Varicella Evidence of Immunity

The Advisory Committee on Immunization Practices (ACIP) considers evidence of immunity to varicella to be:

- Written documentation of 2 doses of varicella vaccine given no earlier than age 12 months with at least 4 weeks between doses.
- U.S.-born before 1980*
- A healthcare provider's diagnosis of varicella or verification of history of varicella disease
- History of herpes zoster, based on healthcare provider diagnosis
- Laboratory evidence of immunity or laboratory confirmation of disease

*Note: year of birth is not considered as evidence of immunity for healthcare personnel, immunosuppressed people, and pregnant women.
**Varicella in Daycares and Schools**

- Daycares and schools may call MDPH or the BOH when they are informed of a child with varicella in their facility.
- Instruct the facility to send in the teleform and relay control measures:
  1. Isolate case during infectious period
  2. Determine zones of exposure and identify those exposed (classrooms, bus/carpool, lunch group, after school activities/sports)
  3. Identify which of the exposed do not meet evidence of immunity (i.e. not appropriately vaccinated, no immunity testing, or no history of disease)
  4. Refer those without immunity for vaccination
     - High risk individuals (infants <12months, pregnant women, immunocompromised individuals) should talk with their PCP
  5. Exclude those who cannot or will not be vaccinated
  6. Send out notification letter
  7. Conduct surveillance for 2 incubation periods

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**Chickenpox Advisory**

Inform parents:
- If your child has recently had chickenpox or varicella, they may not be immune to the virus. They should be monitored closely for signs of illness.
- If your child has been exposed to chickenpox, they should be monitored for signs of illness.

What to do about exposure:
- Separate the infected child from other children.
- Avoid contact with other children until the child is no longer contagious.
- Avoid contact with other children until the child is no longer contagious.

Who to call if you have questions:
- Call 617-983-6800 for assistance.
Example: Varicella Case in ABC Daycare

15mo old came to daycare on Thursday 12/8 and staff noticed a rash. Mom took child to the doctor on Friday 12/9 where they were clinically diagnosed with chickenpox.

Daycare provider spoke with mom who stated that rash started Wednesday 12/7, but they disregarded it and sent child to daycare that day.

- **Step 1: Report**
  - Hopefully, the doctor submitted a teleform reporting this case, but the daycare provider or LBOH could too to ensure it’s reported

- **Step 2: Determine infectious period and isolate**
  - Start: 2 days prior to rash onset = Monday 12/5
  - End: Child can return once lesions have crusted over, usually about 5 days or so

- **Step 3: Determine exposures**
  - In addition to household exposures, daycare reports that child is only in 1 classroom throughout the day with same cohort of children. No carpooling, playdates, etc.
Example, continued

• **Step 4-6: Assess evidence of immunity, refer for vaccination or exclude if necessary**
  • **Child 1:** 5yo with documentation of 2 appropriately administered doses – **GOOD TO GO**
  • **Child 2:** 3yo with documentation of 1 dose – Child is UTD so **does not need to be excluded** but parent should talk with PCP about getting dose 2
  • **Child 3:** 2yo with no vaccines on record and parent chooses to not vaccinate – **EXCLUDE DAY 8- 21 FROM EARLIEST EXPOSURE TO RASH ON 12/7 (12/15-12/28, RETURN 12/29)**
  • **Child 4:** 11mo old, too young to receive vaccination - **EXCLUDE DAY 8- 21 FROM EARLIEST EXPOSURE TO RASH ON 12/7 (12/15-12/28, RETURN 12/29)**
  • **Child 5:** 5yo with only 1 dose of vaccine – **Should receive second dose ASAP or be excluded**
  • **Staff 1:** Staff members claims they are fully vaccinated but has no record, so they will seek titer testing to show immunity – **If testing shows immunity, they may stay at work. If immunity results are negative, staff should receive a dose of vaccine or be excluded.**
  • **Staff 2:** Proof of 2 doses of vaccine, is pregnant – **Is UTD so can stay at work, but should talk to doctor given high-risk condition**

• **Step 7-8: Send out notification letter and conduct surveillance for 2 incubation periods**
  • Keep a close eye out for rash illness in the daycare from 12/8 – 1/19
  • Send children who develop rash home and refer for medical evaluation
  • If additional cases arise, send in Cluster Reporting Form
Varicella Vaccination

Routine 2-dose vaccination:
- First dose at age 12 through 15 months
- Second dose at age 4 through 6 years

Vaccination After Exposure:
- Ideally, the vaccine should be given within 3 to 5 days after the person is exposed. This may prevent varicella or make it less severe.
- Even if it has been more than 5 days, the vaccine should still be offered, and individual may attend school once vaccinated.
- Varicella vaccine is neither approved nor recommended for children younger than age 12 months. Exposed infants under 12 months should be excluded.
- Children who are age-appropriately vaccinated with 1 dose do not need to be excluded but should consult their PCP about early administration of the second dose (for children under 12 years old, the second dose can be given as early as 3 months after first dose).

Two vaccines available:
- Varivax (Varicella vaccine)
- ProQuad (MMRV vaccine)
Shingles (Varicella Zoster Virus)

Quick Facts

- **Shingles** is caused by *varicella zoster virus (VZV)*, the same virus that causes chickenpox. After a person recovers from chickenpox, the virus stays dormant (inactive) in the body. This virus can reactivate years later, causing shingles.
  - Shingles is a painful rash that develops on one side of the face or body. The rash consists of blisters that typically scab over in 7 to 10 days and fully clears up within 2 to 4 weeks.

- **Vaccination is available to help prevent shingles!**
  - CDC recommends two doses of recombinant zoster vaccine (RZV, Shingrix) to prevent shingles and related complications in adults 50 years and older.
  - Shingrix is also recommended for adults 19 years and older who have weakened immune systems because of disease or therapy.
  - *Note:* Zoster vaccine live (Zostavax) is no longer available for use in the United States, as of November 18, 2020.

https://www.cdc.gov/shingles/vaccination.html
Shingles (Varicella Zoster Virus)

Quick Facts

- **Shingles is NOT reportable in MAVEN**, but sometimes may be initially reported as Chickenpox.
  - If a varicella event is determined to be shingles, notify Epi so MAVEN event can be revoked.

- **Isolation & Quarantine:** As long as someone with shingles can cover their rash/lesions, they do not need to isolate.
  - Exposure to shingles is defined as direct contact with the lesions.
  - Individuals susceptible to varicella who have contact with shingles lesions may develop varicella (not shingles) and should be quarantined/vaccinated as applicable for a varicella exposure.

Shingles is not reportable and does not require investigation, however LBOH may receive questions regarding exposures, particularly in daycare and school settings.
MAVEN Question Packages

Varicella Cases

- Varicella cases are reported via teleform which create MAVEN events
  - If a school or daycare is calling to report a case, you should encourage them to fill out the varicella teleform, or you can fill it out
- The events flow into the "No Follow-up Needed" bulk acknowledgement workflow
  - NO follow-up is required, though special situations may arise and you can prioritize based on local capacity
- Shingles cases are not reported and if in MAVEN, should be revoked

Varicella Clusters

- Varicella clusters are reported via teleform, which create MAVEN clusters, or are sometimes called in by facilities and can be created by LBOHs or state Epis
  - If a school or daycare is calling to report a cluster, you should encourage them to fill out the varicella cluster teleform, or you can fill it out
- Cluster events do not appear in a workflow but can be searched for using the MAVEN ID
Key Takeaways for Routine VPDs

*Haemophilus influenzae and Streptococcus pneumoniae*

- Cases of *Haemophilus influenzae* and *Streptococcus pneumoniae* generally don’t require any public health intervention (no isolation, no quarantine, etc.).
  - EXCEPT *Haemophilus influenzae* type B (Hib) which may require prophylaxis and vaccination recommendations
- The main goal of public health follow-up is data collection, so please complete all MAVEN question packages for all cases.
  - This can be done by contacting the Infection Preventionist or PCP. Families typically do not need to be contacted directly

*Varicella (Chickenpox)*

- Individual cases of varicella are reportable but don’t require public health follow-up.
- Clusters of varicella are also reportable, and facilities may require LBOH assistance with contact tracing and exclusion recommendations.
Resources

• MDPH Division of Epidemiology and Immunization: 617-983-6800

• MAVEN Help Desk: 617-983-6801; mavenhelp@mass.gov

• Disease Reference Materials:
  • Case Investigation Tip Sheets for LBOHs | MDPH (Coming Soon to MAVEN Help)
  • HI Disease (Including Hib) | CDC
  • Hib Fact Sheet | MDPH
  • Pneumococcal Disease | CDC
  • Chickenpox | CDC
  • Chickenpox Fact Sheet | MDPH
QUESTIONS?